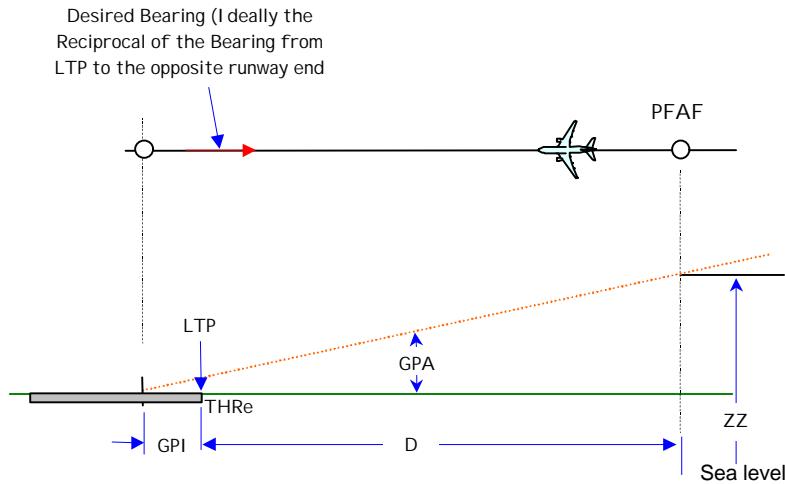


## 2.10 DETERMINING PFAF/FAF COORDINATES (see figure 2-1).

**Figure 2-1. Determining PFAF location**



Geodetically calculate the latitude and longitude of the PFAF using the horizontal distance from the LTP or FTP to the point the glidepath intercepts the intermediate segment altitude. Determine D using the following formulas:  
**{formula includes earth curvature}**

$$\text{Formula: } D = 364609 \left[ 90 - \text{GPA} - \arcsin \left( \frac{20890537 \times \sin(90 + \text{GPA})}{(a - F) + 20890537} \right) \right] - \text{GPI}$$

$$\text{Example: } D = 364609 \left[ 90 - 3 - \arcsin \left( \frac{20890537 \times \sin(90 + 3)}{(2100 - 562.30) + 20890537} \right) \right] - 954.00$$

$$D = 364609 \left[ 87 - \arcsin \left( \frac{20861907.2451}{20892074.70} \right) \right] - 954.00$$

$$D = 364609 [0.0794166528] - 954.00$$

$$D = 28002.03$$

Where:  
 a = FAF Altitude (example 2100)  
 F = LTP elevation (example 562.30)  
 GPA = Glidepath angle (example 3.00°)  
 GPI = Ground point of intercept (example 954.00)

## 2.1.1

### DETERMINING GLIDEPATH ALTITUDE AT A FIX

Calculate the altitude (ZZ) of the glidepath at any distance (D) from GPI using the following formula: {this formula includes earth curvature}

$$\text{Formula: } ZZ = THRe + \frac{20890537 \times \sin(90 + GPA)}{\sin\left(90 - GPA - \frac{D + GPI}{364609}\right)} - 20890537$$

$$\text{Example: } ZZ = 562.30 + \frac{20890537 \times \sin(90 + 3)}{\sin\left(90 - 3 - \frac{954.00 + 28002.03}{364609}\right)} - 20890537$$

$$ZZ = 562.30 + \frac{20890537 \times 0.9986295347}{0.9985560335} - 20890537$$

$$ZZ = 2100$$

Where: GPA = Glidepath angle (example 3.00°)

D = Distance in feet from RWT to fix (example 28002.03)

THRe = Threshold elevation (MSL) (example 562.30)

ZZ = Glidepath MSL altitude at fix

GPI = Ground point of intercept (example 954.00)